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AGERE SYSTEMS INC.
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EXAMINER

THANGAVELU, KANDASAMY

ART UNIT PAPER NUMBER

2123

DATE MAILED: 07/16/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

PK4

Office Action Summary

Application No.

09/356,260

Applicant(s)

EIZENHOEFER ET AL.

Examiner

Kandasamy Thangavelu

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 April 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 July 1999 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Introduction

1. This communication is in response to the Applicants' Amendment dated April 22, 2002. Claims 2-8 and 10-19 were amended. Claims 1-19 of the application are pending and rejected.

Response to Amendments

2. Applicant's arguments filed on April 22, 2002 have been fully considered. The applicant argues that the Alanara reference used in the previous office action does not teach

inserting signaling information related to individual frames into said individual frames; and

partitioning signaling information and inserting said partitioned signaling information into different frames.

In view of this additional references have been used to overcome the applicant's arguments.

The art rejections are based on the additional prior art included in this office action. Therefore, this office action is made non-final.

Claim Objections

3. The following is a quotation of 37 C.F.R § 1.75 (d)(1):

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The claim or claims must conform to the invention as set forth in the remainder of the specification and terms and phrases in the claims must find clear support or antecedent basis in the description so that the meaning of the terms in the claims may be ascertainable by reference to the description.

4. Claims 1, 11 and 21 are objected to because of the following informalities:

Claim 1, line 3 ends with a period.

Claim 11, Line 1, "A system according to claim 9 to 10" is incorrect.

Claim 17, Line 3, "inserting and evaluation signaling information" should be "inserting and evaluating signaling information"

Appropriate corrections are required.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

6. Claims 1-2, 7-10 and 13-14 are rejected under 35 U.S.C. 102(e) as being anticipated by

Balachandran et al. (BA) (US Patent 5,881,105).

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6.1 ~~BA~~^{BA} teaches a system and method for the non-sequential transmission of control signals within a speech transmission. Specifically, as per Claim 1, **BA** teaches a method for signaling of information in a frame based transmission system, whereat the signaling information contains information necessary for the operation of the transmission system (Fig. 1; Col 3, Lines 34-66); characterized by steps of

inserting signaling information related to individual frames into the individual frames (Col 3, Lines 45-47 and Col 3, lines 60-66); the synchronization word inserted in each slot is related to that slot and to that frame and provides for frame synchronization; and

partitioning signaling information and inserting the partitioned signaling information into different frames (Col 4, Lines 3-11 and Col 3, lines 60-66); the FACCH carries the control signals which are 184 bits; the FACCH signals become 456 bits long after encoding; these are split into 8 bursts and sent through 8 separate frames.

6.2 As per Claim 2, **BA** teaches the method of Claim 1, as discussed above. **BA** also teaches that the inserted signaling information and the inserted partitioned signaling information are synchronized by using the given synchronization of the frame based transmission system (Col 3, Lines 45-47 and Col 3, lines 60-66).

6.3 As per Claim 7, **BA** teaches the method of Claim 1, as discussed above. **BA** also teaches that the transmission system is a radio network system (Fig. 3).

6.4 As per Claim 8, **BA** teaches the method of Claim 7, as discussed above. **BA** also teaches that radio network system is a GSM system (Col 1, Lines 34-37 and Col 3, lines 34-37).

6.5 As per Claim 9, **BA** teaches a frame based transmission system for signaling of information, whereat the signaling information contains information necessary for the operation of the transmission system, having means for coding and decoding of data, means for handling, the coded data in frame format, and means for transmitting and receiving the frames (Fig. 1; Col 3, Lines 34-66); characterized by

means for inserting and evaluating signaling information into and from individual frames related to the individual frames (Col 3, Lines 45-47 and Col 3, lines 60-66); the synchronization word inserted in each slot is related to that slot and to that frame and provides for frame synchronization; and

means for partitioning signaling information (12;22) and inserting and evaluating the partitioned information into and from different frames (Col 4, Lines 3-11 and Col 3, lines 60-66); the FACCH carries the control signals which are 184 bits; the FACCH signals become 456 bits long after encoding; these are split into 8 bursts and sent through 8 separate frames.

6.6 As per Claim 10, **BA** teaches the system of Claim 9, as discussed above. **BA** also teaches that means for synchronizing are used to synchronize the inserted signaling information and the inserted partitioned signaling information according to the given synchronization of the frame based transmission system (Col 3, Lines 45-47 and Col 3, lines 60-66).

6.7 As per Claim 13, **BA** teaches the system of Claim 9, as discussed above. **BA** also teaches that the transmission system is a radio network system (Fig. 3).

6.8 As per Claim 14, **BA** teaches the system of Claim 13, as discussed above. **BA** also teaches that radio network system is a GSM system (Col 1, Lines 34-37 and Col 3, lines 34-37).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.

8. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. Claims 3-4 and 15-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Balachandran et al. (BA)** (US Patent 5,881,105), in view of **Le Strat et al. (LS)** (US Patent 6,134,220).

9.1 As per Claim 3, **BA** teaches the method of Claim 1 and 2, as discussed above. **BA** does not teach that the signaling information and the partitioned signaling information indicate coding mode used for coding and decoding data in the transmission system. **LS** teaches that the signaling information and the partitioned signaling information indicate coding mode used for coding and decoding data in the transmission system (Fig. 9; Col 7, Lines 40-42 and Col 14, Lines 60-63), to reduce the resources used to transmit a service and increase the number of calls per cell (Col 3, Lines 13-16); **LS** specifies that the coding mode is sent through FACCAH; since **BA** teaches that FACCH is sent in successive frames, the coding mode could be sent in one frame or partitioned and sent in successive frames. It would have been obvious to one of ordinary skill in the art at the time of the Applicant's invention to combine the method of **BA** with the method of **LS** so signaling information and the partitioned signaling information indicate coding mode used for coding and decoding data in the transmission system, as that would facilitate sending the required information on coding modes between the base station and the mobile station to reduce the resources used to transmit a service and increase the number of calls per cell.

9.2 As per Claim 4, **BA** teaches the method of Claim 1, as discussed above. **BA** does not teach that the inserted signaling information related to individual frames indicates a coding mode

used for coding and decoding data in the transmission system. **LS** teaches that the inserted signaling information related to individual frames indicates a coding mode used for coding and decoding data in the transmission system (Fig. 9; Col 7, Lines 40-42 and Col 14, Lines 60-63), as the coding mode used depends on the quality of transmission required and the resources required (Col 4, Lines 41-50). It would have been obvious to one of ordinary skill in the art at the time of the Applicant's invention to combine the method of **BA** with the method of **LS**, so that the inserted signaling information related to individual frames indicates a coding mode used for coding and decoding data in the transmission system, as that would facilitate sending the correct coding mode information from source station to the destination station for correct decoding of the data.

BA does not teach that the partitioned signaling information inserted into different frames of the uplink is a quality measurement for the transmission. **LS** teaches that the partitioned signaling information inserted into different frames of the uplink is a quality measurement for the transmission (Col 7, Lines 44-48 and Col 14, Lines 60-63), as the quality information is used to select the coding mode to be used (Col 7, Lines 33-38). It would have been obvious to one of ordinary skill in the art at the time of the Applicant's invention to combine the method of **BA** with the method of **LS**, so the partitioned signaling information inserted into different frames of the uplink is a quality measurement for the transmission, as that would facilitate sending the quality measurement information from mobile station to the base station within the available slot.

BA does not teach that the partitioned signaling information inserted into different frames of the downlink indicates a coding mode used for coding and decoding data in the transmission system. **LS** teaches that the partitioned signaling information inserted into different frames of

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the downlink indicates a coding mode used for coding and decoding data in the transmission system (Col 7, Lines 40-42 and Col 14, Lines 60-63), to reduce the resources used to transmit a service and increase the number of calls per cell (Col 3, Lines 13-16). It would have been obvious to one of ordinary skill in the art at the time of the Applicant's invention to combine the method of **BA** with the method of **LS**, so the partitioned signaling information inserted into different frames of the downlink indicates a coding mode used for coding and decoding data in the transmission system, as that would facilitate sending the required coding mode information within the available slot from the base station to the mobile station for future coding of the uplink data.

9.3 As per Claim 15, **BA** teaches the system of Claim 9, as discussed above. **BA** does not teach that the signaling information provided by the means for inserting and evaluating signaling information into and from individual frames and the signaling information provided by the means for partitioning signaling information and inserting and evaluating the partitioned information into and from different frames indicate coding modes used by the means for coding and decoding. **LS** teaches that the signaling information provided by the means for inserting and evaluating signaling information into and from individual frames and the signaling information provided by the means for partitioning signaling information and inserting and evaluating the partitioned information into and from different frames indicate coding modes used by the means for coding and decoding (Col 7, Lines 40-42 and Col 14, Lines 60-63), to reduce the resources used to transmit a service and increase the number of calls per cell (Col 3, Lines 13-16). It would have been obvious to one of ordinary skill in the art at the time of the Applicant's

invention to modify the system of **BA** with the signaling information of **LS** indicating coding mode used for coding and decoding data in the transmission system, as that would facilitate sending correct coding mode information from base station to the mobile station for decoding the data and using proper coding mode in future uplink communication.

9.4 As per Claim 16, **BA** and **LS** teach the system of Claim 15, as discussed above. **BA** does not teach that the system is a fixed part of the radio network system. **LS** teaches that the system is a fixed part of the radio network system (Col 7, Lines 28-29), as the fixed part of the system transmits to the mobile station information representative of the coding mode (Col 7, Lines 40-42). It would have been obvious to one of ordinary skill in the art at the time of the Applicant's invention to modify the system of **BA** with the signaling information in the fixed part of **LS** indicating coding mode used for coding and decoding data in the transmission system, as the correct coding mode information could then be sent to the mobile station from the base station.

9.5 As per Claim 17, **BA** teaches the system of Claim 9, as discussed above. **BA** does not teach that the signaling information provided by the means for inserting and [evaluation] evaluating signaling information into and from individual frames indicates coding modes used by the means for coding and decoding. **LS** teaches that the signaling information provided by the means for inserting and [evaluation] evaluating signaling information into and from individual frames indicates coding modes used by the means for coding and decoding (Col 14, Lines 60-63), to reduce the resources used to transmit a service and increase the number of calls per cell (Col 3, Lines 13-16). It would have been obvious to one of ordinary skill in the art at the time of

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the Applicant's invention to modify the system of **BA** with the signaling information of **LS** indicating coding mode used for coding and decoding data in the transmission system, as that would facilitate sending coding mode information from the mobile station to the base station with the data, for correct decoding.

BA does not teach that the signaling information provided by the means for partitioning signaling information and inserting and evaluating the partitioned information into and from different frames indicates a quality measurement for transmission. **LS** teaches that the signaling information provided by the means for partitioning signaling information and inserting and evaluating the partitioned information into and from different frames indicate a quality measurement for transmission (Col 7, Lines 44-48 and Col 14, Lines 60-63), as the quality information is used to select the coding mode to be used (Col 7, Lines 33-38). It would have been obvious to one of ordinary skill in the art at the time of the Applicant's invention to modify the system of **BA** with the signaling information of **LS** indicating a quality measurement for transmission, as that would facilitate sending the measured quality information from the mobile station to the base station within the available slot.

9.6 As per Claim 18, **BA** and **LS** teach the system of Claim 17, as discussed above. **BA** does not teach that the system is a mobile part of the radio network system. **LS** teaches that the system is a mobile part of the radio network system (Col 7, Line 43), as the mobile part of the system transmits to the fixed part of the system, indication of transmission quality from base station to the mobile station Col 7, Lines 44-48). It would have been obvious to one of ordinary skill in the art at the time of the Applicant's invention to modify the system of **BA** with the

signaling system in the mobile part of **LS** indicating coding mode used for coding and decoding data and the quality information, as the correct coding mode and quality information could then be sent to the base station from the mobile station.

9.7 As per Claim 19, **BA** and **LS** teach the system of Claim 18, as discussed above. **BA** does not teach that the quality measurement for transmission is evaluated by the mobile part of the radio network system, based on frames received from the fixed part of the radio network system. **LS** teaches that the quality measurement for transmission is evaluated by the mobile part of the radio network system, based on frames received from the fixed part of the radio network system (Col 7, Lines 44-46), as the quality information can then be sent to the fixed part for modifying the coding mode (Col 7, Lines 33-38). It would have been obvious to one of ordinary skill in the art at the time of the Applicant's invention to modify the system of **BA** with the system of **LS** that makes the quality measurement for transmission by the mobile part of the radio network system, based on frames received from the fixed part of the radio network system, as the quality measurement would then reflect the transmission quality, which could then be used to adjust the coding mode.

10. Claims 5, 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Balachandran et al. (BA)** (US Patent 5,881,105), in view of **Dahlin (DA)** (US Patent 5,199,031).

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10.1 As per Claim 5, **BA** teaches the method of Claim 1, as discussed above. **BA** does not teach that the inserted signaling information related to individual frames is channel coded separately. **DA** teaches that the inserted signaling information related to individual frames is channel coded separately (Fig. 2, Items 102 and 104; Col 4, Lines 14-35), to match the channeling code with the transmission quality requirement. It would have been obvious to one of ordinary skill in the art at the time of the Applicant's invention to modify the method of **BA** with the method of **DA**, so that the inserted signaling information related to individual frames is channel coded separately, as that would facilitate using different channel codes for control and data information, to increase the accuracy of control information.

10.2 As per Claim 11, **BA** teaches the system of Claim 9 or 10, as discussed above. **BA** does not teach that means for channel coding and decoding are used to channel code and decode the signaling information provided by the means for inserting and evaluating signaling information into and from individual frames. **DA** teaches that means for channel coding and decoding are used to channel code and decode the signaling information provided by the means for inserting and evaluating signaling information into and from individual frames (Fig. 2, Items 102 and 104; Col 4, Lines 14-35), to assure required transmission quality. It would have been obvious to one of ordinary skill in the art at the time of the Applicant's invention to modify the system of **BA** with the system of **DA**, so that means for channel coding and decoding are used to channel code and decode the signaling information provided by the means for inserting and evaluating signaling information into and from individual frames, as that would facilitate channel coding the control information with proper channel codes, to increase the accuracy of control information.

10.3 As per Claim 12, **BA** teaches the system of Claim 9, as discussed above. **BA** does not teach that the means for channel coding are used to channel code and decode the signaling information provided by the means for partitioning signaling information and inserting and evaluating the partitioned information into and from different frames. **DA** teaches that the means for channel coding are used to channel code and decode the signaling information provided by the means for partitioning signaling information and inserting and evaluating the partitioned information into and from different frames (Fig. 2, Items 102 and 104; Col 4, Lines 14-35), to provide required transmission quality. It would have been obvious to one of ordinary skill in the art at the time of the Applicant's invention to modify the system of **BA** with the system of **DA**, so that the means for channel coding are used to channel code and decode the signaling information provided by the means for partitioning signaling information and inserting and evaluating the partitioned information into and from different frames, as that would facilitate channel coding the data and control information with proper channel codes.

11. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Balachandran et al. (BA)** (US Patent 5,881,105), in view of **Dahlin (DA)** (US Patent 5,199,031), and further in view of **Alanara (AL)** (US Patent 6,286,122).

11.1 As per Claim 6, **BA** teaches the method of Claim 1, as discussed above. **BA** does not teach that that the partitioned signaling information inserted into different frames is channel coded together with data contained in the different frames. **AL** teaches that the data word and

signal word could be interleaved and sent in one slot (Col 4, Lines 22-27), so unused portion of a slot containing signaling word could be used to transmit data word. It would have been obvious to one of ordinary skill in the art at the time of the Applicant's invention to modify the method of **BA** with the method of **AL**, so that the data word and signal word could be interleaved and sent in one slot, as that would facilitate using the TCH to send the control signals, thus improving the speech transmission.

DA teaches that the information inserted into different frames is channel coded together with data contained in the different frames (Fig. 2, Items 102 and 104; Col 4, Lines 14-35), to provide for the required quality of transmission. It would have been obvious to one of ordinary skill in the art at the time of the Applicant's invention to modify the method of **BA** and **AL** with the method of **DA**, so that the partitioned signaling information inserted into different frames is channel coded together with data contained in the different frames, as that would facilitate channel coding the information and data using proper channel code.

Applicant's Arguments

12. The applicant argues that Alanara does not teach inserting signaling information related to individual frames into said individual frames and partitioning signaling information and inserting said partitioned signaling information into different frames; Alanara does not suggest that the signaling information to be interleaved with data word is related to the data word or the frame in which the data word is being transmitted; Alanara does not suggest signaling information is partitioned; inserting partitioning information into different frames; the signaling word is not same as the channel quality measurement.

Examiner's reply

13. In response to the Applicant's arguments, the examiner has located a better reference (**Balachandran**) and used in this office action. **BA** inserts synchronization information related to individual frames in individual frames. **BA** also teaches that the control information in FACCH is 456 bits long and is partitioned and sent in multiple bursts in successive frames.

With respect to the applicant's argument that Alanara does not suggest that the signaling information to be interleaved with data word is related to the data word or the frame in which the data word is being transmitted, the Examiner respectfully disagrees. Alanara (Col 4, Lines 21-27) has not specified any constraint on the signaling word to be interleaved with the data word. So the signaling word could be both related to the data word and current frame or it could be not related.

The applicant has argued that the signaling word is not same as the channel quality measurement. The quality measurement is a data. However, **BA** teaches that data is also partitioned and inserted into different frames (Col 3, Lines 60-66).

In view of this additional references have been used to overcome the applicant's arguments.

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to the applicant's disclosure.

The following patents are cited to further show the state of the art with respect to GSM signaling, channel coding and communicating the coding mode and quality information between the base station and mobile station.

1. Wan, "Power management system for a mobile unit by reducing neighbor cell scanning", U.S. Patent 6,385,460, May 2002.
2. Hassan, "Fast associated Control channel technique for satellite communications", U.S. Patent 6,031,826, February 2000.
3. Galyas et al., "Quality-based handover", U.S. Patent 6,138,020, October 2000.
4. Ghisler, "Method and an arrangement for conducting multiple calls simultaneously", U.S. Patent 5,926,755, July 1999.
5. Raith et al., "Method of and apparatus for selective resynchronization in a digital cellular communications system", U.S. Patent 5,546,464, August 1996.
6. Sellin et al., "System for handling data errors on a cellular communications system PCM link", U.S. Patent 5,491,719, February, 1996.
15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Kandasamy Thangavelu whose telephone number is 703-305-0043. The examiner can normally be reached on Monday through Friday from 7:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kevin Teska, can be reached on (703) 305-9704. The fax phone number for the organization where this application or proceeding is assigned is 703-746-7329.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-9600.

K. Thangavelu
Art Unit 2123
July 8, 2002



SAMUEL BRODA, ESQ.
PATENT EXAMINER